

REMARKS

Claims 1-4, 6-7, and 24-33 are pending, with claims 1 and 24 being independent. Claims 24-25, 27-29, and 33 were rejected. Claim 26 was objected to. Claims 1-4, 6-7, and 30-32 were allowed.

Allowable Subject Matter

The applicant appreciates the indication that claims 1-4, 6, 7 and 30-32 are allowed, and that claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, independent claim 24 from which claim 26 depends is considered to be allowable for the reasons discussed below, and accordingly it is respectfully requested that the objection to claim 26 be withdrawn.

Claim Rejections Under 35 USC 102

Claims 24, 25, 27, 28, and 33 were rejected under 35 USC 102(e) as being anticipated by Oana et al. (Oana) (U.S. Patent Application Publication No. 2003/0071312). This rejection is respectfully traversed.

In explaining the rejection, the Examiner refers to an "attached marked-up version of Figure 5 [of Oana]." However, no such marked-up version was attached to the Office Action of April 28, 2006. It is presumed that the missing marked-up version of FIG. 5 of Oana is the same as the marked-up version of FIG. 5 of Oana that was attached to the Office Action of November 1, 2005. If so, confirmation of this is respectfully requested. If not, it is submitted that the Office Action of April 28, 2006, is incomplete, and it is respectfully requested that a complete Office Action providing a copy of the missing marked-up version of FIG. 5 of Oana be issued, and that the period for response be restarted.

It is submitted that Oana does not disclose "an area surrounded by the primary grain boundaries" as recited in independent claim 24 as alleged by the Examiner for the following reasons.

Attached hereto is a marked-up portion of FIG. 5 of Oana in which the heavy lines indicate boundaries which the Examiner considers to be "primary grain boundaries" as recited in claim 24 as shown in the marked-up copy of FIG. 5 of Oana attached to the Office Action of November 1, 2005. There are 20 boundaries marked with heavy lines in the attached marked-up portion of FIG. 5 of Oana, and these 20 boundaries are numbered from 1 to 20 in the clockwise direction beginning at the top.

Boundaries # 2, 4, 7, 9, 12, 14, 17, and 19 in the attached marked-up portion of FIG. 5 of Oana may arguably be considered to be "primary grain boundaries" as recited in claim 24 because two octagonal crystal grains grown in different directions meet at these boundaries.

It is not clear from Oana whether boundaries #3, 8, 13, and 18 in the attached marked-up portion of FIG. 5 of Oana may be considered to "primary grain boundaries" as recited in claim 24 because at these boundaries, an octagonal crystal grain grown in one direction meets a square maximum-intensity area centered around a point where the maximum energy intensity E_{max} shown in FIGS. 3-5 of Oana was irradiated, and the exact physical make-up of these square maximum-intensity areas is not clearly described in Oana. The only description of these square maximum-intensity areas in Oana appears to be in paragraph [0042], lines 1-8, of Oana which reads as follows:

In the areas in which the temperature of semiconductor film is highest (corresponding to areas receiving the highest irradiation energy and, correspondingly, to the areas in which the horizontal growth of crystallization proceeds), a plurality of crystals which have different or crossed crystallization growth direction collide with one another, and their contacting areas form the area of fine crystals or the borderline of crystals.

However, boundaries #1, 5, 6, 10, 11, 15, 16, and 20 in the attached marked-up portion of FIG. 5 of Oana are clearly not "primary grain boundaries" as recited in claim 24 as alleged by the Examiner because at these boundaries, an octagonal crystal grain grown in one direction meets an amorphous area as indicated in the attached marked-up portion of FIG. 5 of Oana. In contrast, a "primary grain boundary" as recited in claim 24 is a boundary where crystal grains grown in different directions meet. The amorphous areas indicated in the attached marked-up portion of FIG. 5 of Oana are areas that were irradiated with an energy less than the melting threshold energy E_{mth} as shown in FIG. 4 of Oana.

Since boundaries #1, 5, 6, 10, 11, 15, 16, and 20 in the attached marked-up portion of FIG. 5 of Oana are not "primary grain boundaries" as recited in claim 24 as alleged by the Examiner, it is submitted that Oana does not disclose "an area surrounded by the primary grain boundaries" as recited in claim 24 as alleged by the Examiner.

Furthermore, it is submitted that boundaries #1, 5, 6, 10, 11, 15, 16, and 20 in the attached marked-up portion of FIG. 5 of Oana are not "a boundary where polycrystalline silicon grains grown in different directions meet" as recited in claim 33 as alleged by the Examiner because, as discussed above, boundaries #1, 5, 6, 10, 11, 15, 16, and 20 are boundaries where an octagonal crystal grain grown in one direction meets an amorphous area.

It is submitted that claims 25 and 27-28 which depend from claim 24 are patentable over Oana at least for the same reasons that claim 24 is patentable over Oana.

For at least the foregoing reasons, it is respectfully requested that the rejection of claims 24, 25, 27, 28, and 33 under 35 USC 102(e) as being anticipated by Oana be withdrawn.

Claim Rejections Under 35 USC 103

Claim 29 was rejected under 35 USC 102(e) as being anticipated by Oana (not Zhang et al. (Zhang) (U.S. Patent No. 6,451,638)) as indicated by the Examiner) or, in the alternative, under 35 USC 103(a) as obvious over Akimoto et al. (Akimoto) (U.S. Patent Application Publication No. 2003/0197666) in view of Oana. This rejection is respectfully traversed.

Although the Examiner referred to Zhang in the statement of the rejection of claim 29 under 35 USC 102(e), it is presumed that the Examiner actually intended to refer to Oana since independent claim 24 from which claim 29 depends was rejected over Oana, and since the Examiner refers to "[t]he TFT of Oana (Figure 6)" in explaining the alternative rejection of claim 29 under 35 USC 103(a). Oana has a Fig. 6 which shows a TFT, while Zhang has FIGS. 6A-1, 6A-2, 6B, 6C, and 6D which do not show a TFT.

In any event, it is submitted that claim 29 which depends from claim 24 is patentable over Oana and Akimoto at least for the same reasons that claim 24 is patentable over Oana.

For at least the foregoing reasons, it is respectfully requested that the rejection of claim 29 under 35 USC 102(e) as being anticipated by Oana or, in the alternative, under 35 USC 103(a) as obvious over Akimoto in view of Oana be withdrawn.

Conclusion

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.


Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with the filing of this paper, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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